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LI.—*Notes on African Non-marine Mollusca, with Descriptions of many new Species.* By M. Connolly.

[Plate XIV.]

In the years just previous to 1914 an enormous amount of material of the highest conchological importance was sent home from Tropical Africa by Messrs. A. Blayney Percival, Robin Kemp, and C. W. Woodhouse. Some of the results of their labours were published by H. B. Preston in a series of short papers on a wide range of genera, culminating in two longer articles specializing the Streptaxidæ and Zonitidæ of that part of the Continent.

It is common knowledge that much further work was in contemplation by the same author on the Stenogyridæ and other families; descriptions and even figures of many new species had been prepared and were ready for press, when sundry world-wide disturbances delayed publication, which it has hitherto been impossible to resume.

It has now been my good fortune to acquire from Mr. Preston the whole collection of over 300 shells selected by him as types of the unpublished species, and I propose to deal with these and a few from other sources in the following series of papers.

As early publication was expected, many paratypes were distributed by Preston before the war and find place in

public and private collections under manuscript names, more than one of which has already appeared in print and one, at least, in synonymy. I have, therefore, thought it advisable to retain, as far as possible, the names originally suggested by Preston, but, with his full approval, in order to avoid the clumsy system of joint or sponsored nomenclature, I accept all responsibility for authorship, while tendering to Mr. Preston most grateful thanks for his initiative and assistance.

One or two species, however, originally distributed by him as new, have since, from various causes, proved to be invalid and may escape notice altogether in these pages. If, therefore, on the conclusion of my articles, any collector finds himself in possession of a species bearing a manuscript name bestowed by Preston and unmentioned by myself, I will be glad to inform him as to the reason of its non-publication if he will communicate with me on the subject.

Except where otherwise specified, the types of all the new species are at present in my collection.

The frequent allusions to Pilsbry's arrangement refer, for the most part, to that adopted by him in his "Review of the Land Mollusks of the Belgian Congo" (Bull. Amer. Mus. N. H. xl. 1919).

Family Streptaxidæ.

Genus Tayloria, Bourguignat, 1889*.

Bourguignat founded this genus for two species, *Zonites ventrosa*, Gibbons, and *Tayloria jouberti*, Bgt. I cannot find that the genotype has ever been fixed, and therefore nominate *T. jouberti* for that position. Bourguignat probably never saw *ventrosa*, for it was founded on a single specimen, which appears to be lost, and I believe that no others are known; it is a very small shell, less than $4\frac{1}{2}$ mm. in diameter, and may not belong to the genus.

On the other hand, *T. jouberti* appears to be one of the group of Zonitoid African Streptaxidæ, some of which are well illustrated by Preston† and are apparently closely allied to the South American genus *Artemon*, Beck.

Artemonopsis, Germain, 1908‡, founded for a small West African species, appears to be a synonym of *Tayloria*.

* Moll. de l'Afr. équat. p. 38.
† P. Z. S. London, 1913, pl. xxxii. figs. 1–3.
‡ Bull. Mus. Paris, xix. p. 124, and J. de C. lvi. p. 98.

The genus includes the following :—

Streptaxis (*Artemonopsis*) *chevalieri*, Germain, 1908.
„ *desiderata*, *marsabitensis*, and *urguessensis*, Preston, 1913.
Gonaxis helicoides, C. Boettger, 1913.
Rhytida hyalinoides, Thiele, 1911.
Tayloria iterata, von Martens, 1897.
„ *jouberti*, Bourguignat, 1889.
Helix usambarica, Craven, 1880.
Zonites ventrosa, Gibbons, 1877.

From examination of the radulæ of *hyalinoides*, *usambarica*, and *urguessensis*, Thiele * considers that the genus has closer affinity with the Paryphantidæ than with the Streptaxidæ.

Tayloria shimbiensis, sp. n.

Shell of fair size, depressedly turbinate, perforate, thin, silky, semitransparent, olivaceous. Spire but little raised, though each whorl is plainly visible in profile above the next; apex obtuse. Whorls 5½, not very convex, regularly and rather rapidly increasing, the last rounded at the periphery, the first 1¾ microscopically, malleately punctate, remainder sculptured above with very close, regular, raised, curved, oblique, transverse striæ, which almost disappear at the periphery and are hardly visible on the polished base; suture simple, well defined. Aperture sublunate, oblique, slightly descending; peristome narrowly reflexed; columella very weak; umbilicus very broad and deep; callus and dentition none.

Diam. maj. 15·8, min. 14·3; alt. 9·3; apert., alt. 6·8, lat. 7·2 mm.

Hab. Kenya, Shimbi Hills (*Kemp*).

This species appears to differ from *helicoides* in being flatter and more strongly sculptured above, and from *iterata*, *marsabitensis* and *urguessensis* in being considerably less highly sculptured beneath, while *chevalieri*, *desiderata* and *hyalinoides* are described as smooth and glossy on the upper as well as the under side of the shell; *usambarica* is an altogether larger form.

* D. Zentr.-Afr.-Exp. 1911, p. 187, and Arch. f. Molluskenkunde, 1921, p. 156.

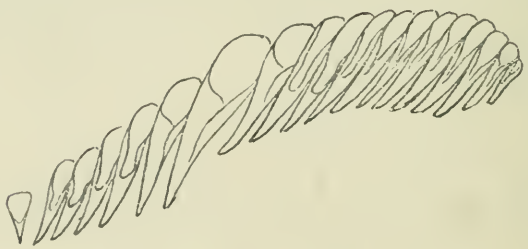
Genus Marconia, Bourguignat, 1889.

Marconia latula (Mts.), 1895.

Figs. 49 & 50 on Pl. XIV. illustrate two paratypes in the British Museum, from Butumbi and Migere respectively; fig. 58 is that of a shell collected by Kemp near Lake Mutanda, which Preston, perhaps rightly, considered a distinct species and intended to name in accordance with its egg-like form. In view, however, of the great variation in length and relative breadth which occurs in species of this genus, I hesitate to regard it as other than an obese, rather senile example of *M. latula*.

Marconia margarita (Preston), 1913.

A small series collected by A. O. Fisher near Fort Portal appear inseparable, on conchological grounds, from this species, of which a paratype is illustrated in fig. 51. They vary in size from 13·3 × 7·5 to 15·8 × 9·5 mm., the two largest being depicted in figs. 59 & 60.



Marconia margarita (Preston). Half of one row of radula, × 53.

It will be seen that there is practically no difference in aspect between the shells of *M. latula* and *M. margarita*, and I would have united them without hesitation, were it not for the fact that the radula extracted by Colonel Peile from more than one of the Fort Portal series differs so considerably from that of *latula*, as described by Thiele, that, if the shells are rightly identified and the radulæ normal, they cannot possibly be conspecific.

The animals from Fort Portal were yellowish green, and imparted their hue to the water in which the shells were soaked previous to their extraction. The radula, of which Colonel Peile has kindly furnished the subjoined drawing (see text-fig.), has a small median tooth; the admedians are

18 in number, increasing in size from 1 to 6, which is the largest, and diminishing thence to 10; 10 to 16 subequal, 17 rather smaller than 16, 18 the smallest. Number of rows, including nascent, 54.

Marconia elgonensis (Preston), 1913.

It has not been possible to examine the radulæ, but, judging from the shells alone, this species appears to be widely distributed to the north and east of L. Victoria Nyanza, having been collected on Mt. Elgon (*Woodhouse*), the Uasin Gishu Plateau (*Mrs. Barber*), Malange, Mabira Forest (*Dummer*), and the Darugu River Valley (*Harries*). The animal resembles in colour that of *M. margarita*.

While varying little in form, this species shows enormous variation in size, especially at a distance from the type-locality, in the Darugu R. valley, where examples range from 10½ up to 15 mm. in length, while in the Cedar Forest on the Uasin Gishu Plateau, on the eastern slope of Mt. Elgon, the average length is rather smaller than that of the type, being only 9 mm.

The gradual and regular range in size is shown in a series from various districts in figs. 43 to 48 and 52 to 57 on Pl. XIV., among which may also be observed a marked difference in comparative width between examples from the same locality, the lower sutures being noticeably more oblique in the more slender shells.

Genus Ptychotrema, Mörch, 1852.

Ptychotrema fisheri, sp. n. (Pl. XIV. fig. 32.)

Shell comparatively large, cylindrical, rimate, rather solid and silky, semitransparent, pale lacteous-olivaceous. Spire produced, sides nearly parallel, apex hemispherical. Whorls 8, nearly flat, first 4 rapidly increasing, remainder nearly equal, sculpture consisting of oblique transverse striæ, extremely close and faint on the first 4 whorls, more distant and much stronger, especially below the suture, on the remainder; suture shallow, subcrenulate. Aperture quadrate, narrowing at base; peristome continuous, white, shining, broadly reflexed; dentition consisting of a strong fold at the angle of paries and sinus, concave on its right and entering as far as can be seen within the shell; opposite this is a single supra-palatal denticle, below which is a large inrunning fold, corresponding to a deep external furrow

which extends nearly round to the columellar margin ; a more deep-set fold on the right of the base, corresponding to a similar, but smaller, external furrow ; two small denticles midway up the inner columellar margin, which are duplicated by two similar, but quite separate, denticles deep within the shell, high up on the columella, while above the latter, commencing slightly nearer the surface, is a narrow, but prominent, inrunning fold on the left of the paries. Callus so thick as to make the peristome continuous ; rima long, narrow, and shallow.

Long. 15·4, lat. 5·8 ; apert., alt. 2·8, lat. 2·0 ; last whorl, 7·0 mm.

Hab. Uganda, near Fort Portal (*Fisher*).

Type in Coll. Peile.

It seems extraordinary that this fine species has not been discovered before in such a frequently explored neighbourhood, but I can find nothing very like it among species hitherto described ; one of its most distinctive features is the duplicated columellar dentition. I have much pleasure in dedicating it to its finder, whose researches promise to furnish results of great value.

Section Parennea, Pilsbry, 1919.

Ptychotrema (*Parennea*) *cedrorum*, sp. n.
(Pl. XIV. fig. 13.)

Shell minute, subovate, rimate, thin, subasperate, somewhat bleached in the type, but normally probably olivaceous. Spire produced, sides slightly convex, apex rounded. Whorls 6, convex, gradually increasing, the first 2 smooth, remainder sculptured with close, regular, well-defined, rather wavy, vertical striæ, which are far fainter and slightly oblique on the third whorl ; suture simple, deep. Aperture nearly heart-shaped ; peristome slightly expanded, white, continuous ; columella weak, rima deep ; dentition consisting of a deeply entering lamella on the right centre of the paries, which is sinuate at that point, and a prominent inrunning ridge-like fold in the centre, but not reaching the margin, of the outer lip, corresponding to a deep external spiral furrow extending halfway round the body-whorl.

Long. 2·8, lat. 1·5 ; last whorl 1·2 mm.

Hab. Kenya, Cedar Forest, Uasin Gishu Plateau, 8500 ft. (*Mrs. Barber*).

Type in Albany Museum, Grahamstown.

Obviously near akin to *P. æquatoriale*, Pilsbry, from the Ituri Forest, Belgian Congo. The last-named, however, is typically a larger form, 3·6 mm. in length, with apparently more distant striæ, while the palatal fold terminates in a conspicuous denticle on the outer lip, a feature entirely lacking in the new species, in which, moreover, the parietal lamella is situated nearer the centre of the paries and none of the dentition is of sufficient prominence to be noticeable in the photographic figure.

Genus Gulella, Pfeiffer, 1856.

Gulella bitzeensis, sp. n.

Shell comparatively large, rimate, elongate-oval, thin, smooth, glossy, transparent, pale olivaceous. Spire produced, sides slightly and regularly convex, apex rounded. Whorls 5, flattish, regularly increasing, protoconch sparsely microscopically malleate, and all but the apical whorl sculptured with extremely faint, oblique, transverse striæ; suture simple, shallow. Aperture nearly triangular, narrowly rounded at base; peristome white, shining, broadly reflexed; columella long and straight, rima long and shallow; callus faint; dentition as follows:—a large lamella, incurved on the right and hooked to the left, at the junction of paries and outer lip (in the type there is no other parietal process, but a mid-parietal denticle is present in the generality of specimens); a large square tooth, showing slight trace of bifidity, arising from a small external cavity, halfway down the outer lip, with a small sharp denticle above, midway between it and the paries; a minute mid-basal denticle and two large, narrow, horizontal columellar teeth, the lower of which enters deeply with a slight curve, the upper straight and only shortly entering.

Long. 11·3, lat. 6·2; apert., alt. 4·0, lat. 3·7; last whorl 6·8 mm.

This species forms one of a group with *G. cavidens* (Mts) and *acutidens* (Bttg.), the three being distinguishable as follows:—

G. cavidens: the upper columellar denticle is very small and situate on the extreme edge of the inner margin of the columella; the lower columellar tooth or fold is rather deeply entering from the edge inwards and slightly downwards, curved into a hollow on its upper side; the lower tooth on the outer lip is nearly square; the shell examined measures 13·0 × 6·6 mm.

G. acutidens: the upper columellar denticle is slightly more removed from the margin, and the lower only enters a very short distance and is acute, not hollow; the two teeth on the outer lip are closer together than in *cavidens* and the lower is acute, not square; the shell examined measures 11·0 × 6·1 mm.

G. bitzeensis: the upper columellar denticle is more prominent than in either of the foregoing, equally inset with that of *acutidens*; the lower enters deeply but less downward than in *cavidens*; the teeth on the outer lip are as in *cavidens*.

Gulella cancellata, sp. n. (Pl. XIV. fig. 36.)

Shell of moderate size, perforate, cylindriform, semi-transparent, glossy with a silky sheen, pale olivaceous. Spire produced, sides parallel, apex flatly mamillate. Whorls 6½, convex, first 3½ rapidly increasing, last 3 almost equal; the first 2 whorls extremely faintly, closely, microscopically, transversely striate, with very faint, fine, rather distant spiral striæ commencing towards the end of the 2nd whorl, where there are about 8 visible, and continuing on the remainder, cutting through the close, fine, curved, oblique transverse striæ which cover the last 3½ whorls; suture simple, impressed. Aperture quadrate; peristome white, shining, reflexed; columella straight, rima pronounced; callus white and thick; dental process five-fold; a stong incurved lamella at the junction of paries and outer lip; 2 well-defined teeth on the outer lip, arising from one broad base which corresponds to a small external depression; a rather smaller tooth, corresponding to a minute external depression, on the centre of the base, these 4 teeth being nearly equidistant; and a strong sharp fold, with a downward slant, about two-thirds way up the columella.

Long. 6·5, lat. 3·0; apert., alt. 2·0, lat. 1·2; last whorl 3·5 mm.

Var. ex forma *minor*. (Pl. XIV. fig. 37.)

Resembles the type in all external features, but contains only 5 whorls and is considerably smaller, measuring:

Long. 4·3, lat. 2·2; apert., alt. 1·2, lat. 0·9; last whorl 2·6 mm.

Hab. Kenya, Larogi Hills (*Percival*).

A beautiful species, noticeable for its criss-cross sculpture and very regular dentition. *G. lima* (Preston), which has

somewhat similar sculpture, has a double tooth on the columella.

Gulella candela, sp. n. (Pl. XIV. fig. 28.)

Shell very small, cylindrical, perforate, smooth, glossy, nearly transparent, pale milky olivaceous. Spire produced, sides parallel, apex mamillate. Whorls 6, first 2 rapidly increasing, remainder nearly equal; the sculpture, which is hardly visible under a microscope except on the last 3 whorls, consists of faint, rather close, slightly curved and oblique, transverse striæ, strongest just below the suture, which is simple and rather shallow, though well defined. Aperture subquadrate; peristome white, shining, reflexed; columella straight, rima deep; callus pronounced; dental process four-fold:—a prominent inrunning lamella at the junction of paries and outer lip; a very large triangular tooth on the outer lip, corresponding to a deep external cavity with 4 or 5 strong puckers behind it; a small tubercle to the left of the base and a broad blunt fold deep-set on the columella.

Long. 4·3, lat. 1·4; last whorl 1·9 mm.

Hab. Kenya, Taru Desert (*Percival*).

Var. ex forma *minor*.

Similar to type, but containing only $5\frac{1}{2}$ whorls and considerably smaller, measuring: long. 3·3, lat. 1·2; last whorl 1·5 mm. It occurs in the same district, but has not yet been found in company with the type.

This little species resembles in shape and size *G. gwendolinæ* and *G. foveolata* (Preston). In *gwendolinæ*, however, there is a double columellar tooth and 2 clear teeth on the outer lip, while in *foveolata* there are 2 basal denticles, and the tooth on the outer lip has an upper cusp, with which the parietal plait interlocks.

Gulella pisa, sp. n. (Pl. XIV. fig. 21.)

Shell very small, elongate, imperforate, rather solid, semitransparent, pale milky olivaceous. Spire produced, very slightly inclined to the right, apex rounded. Whorls 6, nearly flat, regularly and very slowly increasing, the first smooth, remainder sculptured with close, strong, straight, regular, vertical rib-striæ, fainter and closer on the 2nd than on the succeeding whorls; suture simple, rather deeply

impressed, increasing in obliqueness with each whorl. Aperture irregular, peristome thickened, slightly reflexed at the base and more so on the columella, but not forming a rima; outer lip strongly curved outward and forward below the suture, and then considerably incurved before descending almost vertically to the base; dental process three-fold:— a broadly rounded, rather deep-set protuberance high on the columella; a small, sharp mid-parietal plait and a broad, bluntly pointed swelling, corresponding to a deep external depression, on the inward curve of the outer lip; there is a slight callus.

Long. 3·4, lat. 0·9; apert., alt. 1·0, lat. circa 0·4; last whorl 1·5 mm.

Hab. Kenya, Eusso Nyiro (*Kemp*).

A beautiful little species with the form of a *Raffraya*, but the dentition of a *Gulella*. It was distributed by Preston under a Latin name recalling its resemblance to a column, which is too near that of other species to be retainable. It differs from the figure of *G. filicosta* (Morelet) in its parietal plait pointing downwards to the right instead of to the left, and its columellar fold being deep-set at the upper angle of the columella, whereas in *filicosta* it is situate halfway up near the margin.

Gulella impedita, sp. n. (Pl. XIV. fig. 33.)

Shell very small, acuminate-ovate, rimate, thin, silky, pale olivaceous. Spire moderately produced, sides convex, with the greatest circumference at the 6th whorl, apex bluntly rounded. Whorls $7\frac{1}{2}$, rather convex, very slowly increasing, the first $2\frac{1}{2}$ smooth, remainder sculptured with regular, rather close, slightly oblique liræ, curved on the 3rd and sinuous on the later whorls, very slightly more distant on each succeeding whorl, about 23 being visible from the front of the 6th; suture simple, impressed. Aperture subreniform; peristome reflexed, white, continuous, slightly angulate at the meeting of paries and columellar margin; columella concave, rima deep; dentition consisting of an incurved lamella on the right centre of the paries, which merges from that point into the sinus; a triangular tooth, pointed at its upper extremity, corresponding to a deep and lengthy external depression, at the base of the sinus; and a broad fold, ridged and bluntly pointed, too deep-set on the columella for its full details to be perceptible; the basal tooth is represented by an inconspicuous inrunning ridge,

corresponding to a pronounced external crease, on the left of the base.

Long. 3·1, lat. 1·8; apert., alt. 0·8, lat. 0·6; last whorl 1·5 mm.

Hab. Kenya, Kekumega (*Percival*).

A rather ordinary little species of the strongly sculptured group with conical apex, but differing in its small round aperture and dental process from any of its fellows.

Gulella calva, sp. n. (Pl. XIV. fig. 35.)

Shell small, rimate, shuttle-shaped, thin, asperate, bleached in the type, but normally semitransparent and pale olivaceous. Spire produced, the four apical whorls and the base conical, forming nearly equal triangles, intermediate whorls almost parallel, apex mamillate. Whorls 8, very convex, almost equal in vertical measurement, the first 5 increasing rapidly and remainder equal in diameter; the first 3 smooth, remainder covered with strong, regular, nearly straight, vertical costæ, further apart on the 5th and 6th whorls, about 12 being visible from the front on the 6th, and 16 on the 7th; suture simple, very deep. Aperture triangular, rather narrowly rounded at base; peristome expanded, columella straight, slightly inclined to the left, rima long and deep; callus none; dentition consisting of a rather deep-set, bluntly pointed columellar fold; a slightly incurved lamella at the angle of paries and sinus; a rather large, triangular, pointed tooth on the outer lip, corresponding to a single exterior depression and bearing an inconspicuous cusp rather nearer the surface on its upper slope; and a very small, more deeply set denticle below the large tooth, on the right extremity of the base.

Long. 1·5, lat. 2·1; apert., alt. 1·2, lat. 1·1; last whorl 1·9 mm.

Hab. Kenya, Taru Desert (*Percival*).

Gulella filix, sp. n. (Pl. XIV. fig. 12.)

Shell minute, ovate, rimate, asperate, pale olivaceous. Spire produced, sides slightly convex, apex bluntly rounded. Whorls 7, extremely convex, the first 2, which form the protoconch, smooth and rather disproportionately large, remainder increasing very gradually in size, sculptured with very strong, regular, rather curved, nearly vertical costæ, much closer on the 3rd than on the later whorls, there being

about 11 visible on the front of the 6th whorl; suture simple, deeply incised. Aperture irregularly three-sided; peristome expanded, the ends joined by a thick callus; columella concave, rima small; dentition consisting of a moderate-sized lamella at the junction of paries and sinus; a rather large, pointed, triangular tooth on the outer lip with a small cusp or projection on its upper slope, and a broad, flat, extremely deep-set fold on the columella.

Long. 2·7, lat. 1·3; last whorl 1·2 mm.

Hab. Kenya, Cedar Forest on Uasin Gishu Plateau, 8500 ft. (*Mrs. Barber*).

A minute species, whose convex whorls rather resemble the fronds of a fern.

The type is in the Albany Museum, Grahamstown.

Gulella prestoni, nom. nov.

1910. *Ennea delicatula*, Preston, Ann. & Mag. Nat. Hist. (8) vi. p. 528.

As Pfeiffer bestowed the name *delicatula* on a South African shell in 1857, Preston's species must be renamed, and I have much pleasure in dedicating it to its author. Both species appear to belong to the genus *Gulella*, s. s.

Gulella disseminata (Preston), 1913.

1913. *Ennea disseminata*, Prest. P. Z. S. p. 202.
1913. *Ennea ingeziensis*, Prest. ibid. p. 204.
1913. *Ennea burungaensis*, Prest. ibid. p. 206.

I have not been able to inspect the types, but several paratypes of the three species above quoted have been available for examination and I have no hesitation in uniting them. The appropriate name *disseminata* takes precedence, and the other two do not seem to me worthy of even varietal rank.

Gulella disseminata kekumegaensis, subsp. n.
(Pl. XIV. fig. 14.)

Differs from the typical form through greater comparative width in proportion to its height and in its sculpture, which is almost non-existent on the face of the whorls, but peculiarly strong in the crenulate sutures. The shell contains 6 whorls and measures: long. 3·8, lat. 1·7; apert., alt. 1·1, lat. 0·9; last whorl 2·2 mm.

Hab. Kenya, Kekumega (*Percival*).

The locality, north-east of L. Victoria Nyanza, is rather

remote from that of *disseminata* in the extreme south-west of Uganda, and larger series may ultimately prove the two forms to be specifically distinct.

Pupilla fontana (Krauss) and *Ennea iredalei*, Preston.

E. iredalei, of which I have examined paratypes, appears to have been founded on a large bleached example of *P. fontana*. It represents almost the largest form of the latter, and may be attributable to one of the so-called "species" evolved therefrom by Bourguignat; however, nearly every variation of size and dentition may be met with together in some parts of South Africa, and I agree with Pilsbry (Manual, 1921) in placing all the North and South African forms of the *fontana* group under one name.

A smaller example of this species was collected by Percival between the Laikipia Plateau and Eusso Nyiro.

Section Paucidentina, von Martens.

Gulella (*Paucidentina*) *dupuisi*, sp. n. (Pl. XIV. fig. 39.)

Shell of fair size, cylindric-ovate, rimate, thin, smooth, glossy, transparent, pale olivaceous. Spire produced, 4 apical whorls convexly conic, remainder nearly parallel, apex rounded. Whorls 7, rather convex, slowly increasing, smooth except for extremely faint transverse striæ, which are only visible with a strong lens just below the suture of the later whorls, where they form a faint beading, and for a short distance behind the outer lip; suture filiform, not crenulate. Aperture triangular, with equal sides and rounded angles; peristome white, very slightly thickened and expanded, outer lip clearly angulate in profile, in contrast with the nearly straight striation; columellar margin strongly inclined to the left; rima deep; callus none; dentition consisting of a short sharp denticle on the right centre of the paries; a smaller one, without any external depression, at the angle of the outer lip; and a broad flat plate, extending from the left of the base along two-thirds of the inner columellar margin, with a small swelling or tubercle at each end.

Long. 8·0, lat. 3·9; apert., alt. 2·2, lat. 1·8; last whorl 3·7 mm.

Hab. Belgian Congo, Nsendwe (*Dupuis*).

A considerable series of this species shows very little variation; the length ranges from 8·5 down to 7·1 mm. and the dentition is practically constant except in one example,

in which there is a small extra tubercle just above the tooth on the outer lip. *G. dupuisi* bears close resemblance to *G. monodon* (Morelet) (=*conica*, Mts.) and *G. monodon zariaensis* (Preston), but these have no dental process on the columella and a small tubercle, rather than a tooth, on the inflexion of the outer lip. *G. polloneriana*, Pilsbry, and the other members of its group differ clearly by the presence of an angular parietal lamella and more pronounced columellar dentition.

I have much pleasure in dedicating the new species to its finder, Major Paul Dupuis, the pioneer of our recently extended knowledge of Congo mollusca. The type is in his collection.

Section Pupigulella, Pilsbry, 1919.

Gulella (*Pupigulella*) *pupa* (Thiele) and
Gulella (*Pupigulella*) *pupa ituriensis*, Pilsbry.

A new and unexpected locality for both the above is Camerun, Bitze (*Bates*).

Of two shells from Bitze now before me, the smaller seems to agree with Thiele's figure of *G. pupa* in all respects except the aperture, which is less oblique, and in its rather smaller dimensions, 4·8 × 2·6 mm. with half a whorl less than the figured example from Butumbi, Belgian Congo.

I am quite unable to separate the larger shell from Bitze from Pilsbry's description and figure of his subspecies *ituriensis*; it agrees in length, 5½ mm., and number of whorls with the quoted dimensions of a specimen from Medje.

My two shells differ noticeably in sculpture, which may be described as ordinary and regular, though closer on the last than on the penultimate whorl, in the typical form, while in *ituriensis* it is coarser and more oblique on the 3rd and 4th, and almost obsolete on the front of the last whorl, except for showing very strongly near the crenulate suture.

If my identification of the two forms is correct, and the difference in sculpture is constant, it should be quite sufficient to establish them as distinct species.

Section Plicigulella, Pilsbry, 1919.

Gulella (*Plicigulella*) *sambourouensis* (Dautzenberg), 1908.

This name has been somewhat overlooked by British authorities, examples attributable to it having been usually

distributed as *vicina*, Smith. The two species are very near akin, but their localities are very distant, and, as the two names are in existence, it may be advisable to maintain *vicina* for the Nyasaland race and *sambourouensis* for that which inhabits Kenya Colony.

The striation of *vicina* is extremely fine and close, almost smooth, and the dentition consists of a minute mid-parietal denticle; a strong lamella, slightly hollowed on its right, at the angle of paries and outer lip; three very irregular teeth on the outer lip, arising from a broad flat base corresponding to a single exterior cavity; three close basal denticles, nearly equal in size, of which the two on the right are sometimes more deep-set and sometimes about level with that on the left; and a conspicuous three-pronged columellar fold.

It hails from Nyasaland, Mt. Chiradzulu; Zomba (*Johnston*).

In *G. sambourouensis* the striation is infinitesimally stronger and the sides of the spire more inclined to convexity. The parietal lamella has a tendency to incurvation on its left; the two right-hand basal denticles are, typically, considerably more deep-set than that on the left, and there is usually a most minute additional tubercle on the columella, just below the three-pronged fold, which I have been unable to find in any specimen of *vicina* from Nyasaland.

Hab. Kenya, Sambouron (*Alluaud*), Voi (*Feather*), Laikipia Plateau (*Kemp*).

Gulella (*Pliciyulella*) *salutationis*, sp. n.
(Pl. XIV. fig. 38.)

Differs from *G. vicina* in its smaller size and comparatively more slender form: its sculpture, moreover, is far fainter, being entirely non-existent save for a few faint, irregular, curved, oblique growth-lines. The dentition of the only two specimens collected is as described above for *vicina*; there is no sign of the small tubercle below the triple columellar fold. The shell contains 5½ whorls and measures: long. 5·1, lat. 1·4; apert., alt. 1·7, lat. 0·9; last whorl 3·2 mm.

Hab. Tanganyika, Dar-es-salaam (*Connolly*).

This may eventually prove to be but a subspecies when further series are collected, but its locality is rather remote, and it differs far more from either *sambourouensis* or *vicina* than they do from each other.

Gulella (*Plicigulella*) *perlata*, sp. n. (Pl. XIV. fig. 34.)

Shell very small, rounded-ovate, rimate, thin, glossy, translucent, milky olivaceous. Spire rather short, sides slightly convex at the 4th whorl, apex bluntly rounded. Whorls 5, rather flat, the 2 apical faintly microscopically malleate, remainder gradually increasing, sculptured with fine, fairly close and regular, nearly straight, moderately oblique transverse striæ, almost obsolete on the front of the body-whorl except in the suture, which is crenulate and shallow, but well defined. Aperture irregular: peristome white, shining, reflexed; columella concave, rima pronounced; dentition most complicated, consisting of a large, incurved, somewhat oblique lamella at the junction of paries and outer lip; a sharp, well-defined, mid-parietal denticle; a large tooth, corresponding to a single deep external cavity, arising just below the small sinus and occupying almost the whole length of the outer lip, with 4 distinct cusps, 2 on the upper slope opposite the parietal lamella and 2, less prominent, at each extremity of the broad projection to the left; just below this, deeply inset, are 2 smaller denticles, the left and lower of which occupies the centre of the base; on the left of the base and nearer the surface is a larger denticle, and above this a deep-set, but prominent, three-fold columellar plait.

Long. 3·7, lat. 2·2; apert., alt. 1·2, lat. 1·0; last whorl 2·2 mm.

Hab. Kenya, Kekumega (*Percival*).

A beautiful little species, resembling *G. woodhousei* (Preston) in dentition, but easily recognisable by its shorter broader form.

Section Molarella, nov.

As Pilsbry has created the section *Plicigulella* for species bearing a three-pronged fold on the columella, it may be convenient to apply the name *Molarella* to the group in which the principal columella process is twofold, usually resembling a prominent, two-cusped, molar tooth, though in individual specimens the cusps may not develop, and in certain species the molar may be divided into the appearance of two single teeth.

The group is easily distinguishable, and contains the following species examined by me: *G. consanguinea* (type), *curvilamella* and *uyandensis* (Smith), *usambarica* (Craven), *eo iosa*, *optata*, *lima*, *funerea*, and *gwendolinæ* (Preston).

Judging from the figures, it should also include *G. brevis* (Thiele) and *carea*, *iridescens*, and *malasangiensis* (Preston), while *G. caroli* (Kob.) is described as possessing a double tooth on the upper portion of the columella, although there is no sign of this feature in the figure of the shell.

Gulella (*Molarella*) *gwendolinæ scissidens*, subsp. n.
(Pl. XIV. fig. 27.)

The typical form of *G. gwendolinæ* contains about 6 whorls, is perfectly smooth, with simple, shallow suture, and measures from 5 to 5½ by 1½ mm. The dentition consists of an angular parietal lamella; 2 separate, nearly equal, single teeth on the outer lip, corresponding to a single external cavity; a mid-basal denticle, and a large molar tooth, with two well-defined cusps, on the columella. It is known from the Shimbi Hills and Gazi, Kenya Colony.

G. gwendolinæ scissidens also contains 5½ whorls, but is somewhat smaller than type; it is similar in sculpture, suture, parietal lamella, and mid-basal denticle, but differs very noticeably in the columellar molar, which is split to its base, while on the outer lip is a large pointed upper tooth, bearing a minute second cusp on its upper surface, and a smaller, more deep-set lower tooth at the right extremity of the base.

Long. 4·1, lat. 1·6; last whorl 2·0 mm.

Hab. Tanganyika, Dar-es-salaam (*Connolly*).

The single example taken differs so considerably from typical *gwendolinæ*, both in size and dentition, that it will be fully entitled to rank as a distinct species if the variation proves to be constant. The localities, however, are not very remote, and I should not be surprised if further search along the coast were to produce intermediates, linking the two forms.

Genus Streptostele, Dohrn, 1866.

In 1919 Pilsbry gave a list of 36 species known to him as belonging to the genus *Streptostele*. In addition to these, I have satisfied myself, from examination of the shells themselves or the literature concerning them, that the following species, hitherto attributed to other genera, should be placed in that genus:—

Opeas terebra and *ricina*, Preston.
O. lenta and *venusta*, Smith.
O. bawriense, Pilsbry (= *Stenogyra lucida*, Gibbons).
O. vieirai, Nobre.

Subgenus Raffraya, Bourguignat, 1883.

Opeas bocagei, Nobre.
Ennea taylori, Gibbons.

Section Streptostele, s. s.

Streptostele signata, sp. n. (Pl. XIV. fig. 1.)

Shell of fair size, elongate-turriform, subrimate, thin, silky, transparent, pale olivaceous. Spire produced, sides almost regular, apex rounded. Whorls 9, not very convex, regularly increasing, sculptured with close, regular, slightly curved and oblique transverse striæ, which commence very faintly near the end of the second and are stronger, especially in and for some distance below the sutures, on the later whorls; suture little oblique, subcrenulate, well defined. Aperture ovate, peristome almost imperceptibly thickened; outer lip almost straight in profile for ½ mm., and then receding considerably to the base; columella rather short, slightly inclined inwards, margin very narrowly triangularly reflexed, forming a minute rima; callus thin, transparent, hardly perceptible; dentition none.

Long. 11·7, lat. 3·6; apert., alt. 3·0, lat. 1·5; last whorl 5·3 mm.

Hab. Camerun, Bitze (*Bates*).

A rather variable species in both length and diameter of whorl, the type being of intermediate proportions. It is rather closely allied to *S. buchholzi*, Mts., from Buea, but the latter appears to be a larger form.

Streptostele urguessensis, sp. n. (Pl. XIV. fig. 2.)

Shell comparatively large, lanceolate, imperforate, transparent, silky, pale olivaceous. Spire much produced, sides almost straight, apex acute. Whorls 11, moderately convex, very gradually increasing, first 2 sparsely microscopically punctate, remainder covered with strong, close, regular, almost straight, nearly vertical striæ, weaker on the third and coarser on the penultimate than on the other whorls; suture well defined, moderately oblique. Aperture subpiriform, peristome thickened and extremely narrowly reflexed; outer lip only very slightly angulate forward; columella short, a little concave, with a very small angular twist at its upper extremity; callus pronounced; dentition none.

Long. 13·5, lat. 3·2; apert., alt. 2·5, lat. 1·3; last whorl 4·3 mm.

Hab. Kenya, Urguess (*Percival*).

Streptostele fallooni, sp. n. (Pl. XIV. fig. 3.)

Shell of moderate size, subfusiform, rimate, thin, silky, translucent, pale milky olivaceous. Spire produced, sides conic until the 6th whorl, thence almost parallel to the base; apex acute. Whorls 9, rather flat, the first 4 increasing very slowly in length and breadth, the next two much more rapidly, thus imparting to the spire its irregular appearance, the last 3 about equal in size; the first $2\frac{1}{2}$ microscopically punctately malleate, remainder sculptured with extremely faint, close, regular, nearly straight, slightly oblique, transverse striæ, which are chiefly visible in the sutures and become further apart on each succeeding whorl; suture nearly horizontal, crenulate, well defined. Aperture subrhombic, flattened at base; peristome thickened, infinitesimally reflexed; outer lip hardly curved outward, sharply angulate forward in profile and then receding to the base; columella nearly straight and vertical, margin thickened and reflexed, so as to form a clear rima; callus very pronounced, with a small, inset, mid-parietal tubercle or fold, which recedes about ·5 mm. within the shell.

Long. 8·1, lat. 2·5; apert., alt. 2·1, lat. 1·2; last whorl 3·5 mm.

Hab. Kenya, Near Nairobi (*Rev. W. M. Falloon*), Mau Escarpment (*Doherty*).

A remarkable shell, entirely distinct in its combination of shape and dentition from others of the genus.

Streptostele kenyana, sp. n. (Pl. XIV. fig. 4.)

Shell comparatively large, acicular, rimate, thin, smooth, rather glossy, somewhat bleached in the type, but normally nearly transparent and pale olivaceous. Spire produced, sides nearly regular, apex acute. Whorls 9, almost flat, regularly increasing, the first 3 densely, but most faintly, microscopically punctate, remainder sculptured with very close and faint, nearly straight and vertical striæ, strongest just below the suture, which is only moderately oblique, simple and shallow. Aperture acuminate-ovate, rounded at base; peristome thickened, very slightly reflexed; outer lip a little curved outward, slightly angulate forward in profile and then receding equally slightly to the base; columella concave, margin thickened and triangularly reflexed, forming a small rima; callus and dentition none.

Long. 10·4, lat. 2·9; apert., alt. 2·0, lat. 1·2; last whorl 4·0 mm.

Hab. Kenya, Mt. Kenya, 6000–8000 feet (*Kemp*).

Distinguishable from any of its nearest allies by its flatter whorls and finer, fainter, regular sculpture.

Streptostele oribates, sp. n. (Pl. XIV. fig. 8.)

Shell comparatively large, elongate-turriform, subrimate, thin, silky, nearly transparent, pale olivaceous. Spire produced, sides slightly convex at 7th whorl, apex acute. Whorls 9½, flattish, regularly increasing, the first 2½ very densely microscopically punctate, the next very faintly transversely striate, remainder sculptured with clear, fine, close, regular, slightly curved, vertical striæ; suture crenulate, nearly horizontal. Aperture irregularly subovate, peristome slightly thickened, with trace of expansion at the rounded base; outer lip hardly curved outward, scarcely advancing in profile and then receding slightly to the base; columella slightly concave, margin thickened so as to produce a minute rima; callus and dentition none.

Long. 12·2, lat. 3·5; apert., alt. 2·8, lat. 1·8; last whorl 4·7 mm.

Hab. Kenya, between the Igembi Hills and Nyeri (*Kemp*).

Probably adult and, as shown by the measurements, a more obese form than most of the genus.

Streptostele elongata, sp. n. (Pl. XIV. fig. 10.)

Shell comparatively large, subrimate, much elongate-fusiform, solidified and semibleached in the type, but normally thin, nearly transparent, pale olivaceous. Spire produced, the first 8 whorls gradually tapering, thence almost parallel to the base; apex acute. Whorls 10, rather flat, very gradually increasing, the first 2 faintly microscopically malleate, remainder sculptured with very fine and close, regular, almost straight, very slightly oblique, transverse striæ, which are very faint on the 3rd, less so on the 4th, and stronger on the later whorls; suture but little oblique, simple. Aperture ovate, peristome slightly thickened, with very slight basal expansion; outer lip curved outward, vertical in profile for nearly 1 mm., then receding noticeably to the base; columella straight and erect, triangularly thickened with slight, almost adnate, reflexion, giving the appearance of a minute rima; callus thick; dentition none.

Long. 13·0, lat. 3·0; apert., alt. 3·0, lat. 1·6; last whorl 5·2 mm.

Hab. Kenya, Mt. Kenangop, Aberdare Range (*Kemp*).

The fine striation is slightly more oblique and the shell slightly more slender than that of *S. oribates*, its nearest ally; the whorls also increase slightly more gradually.

Streptostele validior, sp. n. (Pl. XIV. fig. 11.)

Shell of fair size, lanceolate, subrimate, comparatively solid, silky, translucent, pale olivaceous. Spire produced, sides almost regular, apex acute. Whorls 10½, convex, extremely gradually increasing, first 2 smooth, remainder sculptured with close, regular, straight, vertical rib-striæ, extremely faint on the 3rd, but well marked and equal on the later whorls; suture nearly horizontal, scarcely crenulate, well defined. Aperture subrhombic, broadly rounded at base; peristome thickened, extremely slightly reflexed; outer lip curved outward just below the suture, advancing very slightly in profile and then receding nearly as slightly to the base; columella short, erect, margin triangularly thickened and reflexed, nearly concealing the rimation; callus rather faint; dentition none.

Long. 10·5, lat. 2·7; apert., alt. 1·8, lat. 1·3; last whorl 3·2 mm.

Hab. Uganda, Mt. Elgon (*Woodhouse*).

A very distinct species, remarkable for its convex whorls and short wide aperture.

Streptostele sinuilabiata, sp. n. (Pl. XIV. fig. 15.)

Shell of fair size, elongate-turriform, subrimate, rather thin, silky, nearly transparent, milky olivaceous. Spire produced, sides very slightly convex at the 8th whorl, apex mammillate. Whorls 9, moderately convex, gradually and regularly increasing, the first 2½ smooth, remainder sculptured with close, rather coarse, regular, straight, vertical rib-striæ, which are slightly closer together on the last whorl; suture nearly horizontal, simple, well defined. Aperture quadrate, broadly rounded at base; peristome thickened, minutely reflexed; outer lip hardly curved outward, with an extremely faint inward curve at the angle at which, after a short advance forward in profile, it recedes rather sharply to the base; columella short, thickened, slightly concave, margin narrowly reflexed, forming a minute rima; callus pronounced; dentition none.

Long. 9·7, lat. 2·8; apert., alt. 2·2, lat. 1·2; last whorl 3·8 mm.

Hab. Uganda, Mt. Elgon (*Woodhouse*).

The distinguishing feature of this species is the sharp forward angulation of the outer lip, in contrast with the almost straight striation; this appears to be constant even in immature specimens, and, together with the more rapid increase in length of whorl, separates *sinuilabiata* from its nearest ally, *S. validior*.

The protoconch, as shaken out of an adult shell, contains $2\frac{1}{2}$ whorls and is practically smooth until just before the outer lip, where there are 2 or 3 extremely faint transverse striæ.

It will be observed that the 7 foregoing species are all thickly callused and show a slight, but clear, peristomatal reflexion, while in at least one instance there is indication of parietal dentition; they may all be accepted as mature, fully formed examples of the highest development that their particular group is capable of attaining. Of the 10 species which follow, none have a reflexed peristome or any sign of dentition and very few show any trace of callus; whether they are actually mature, or would in course of time have developed any of these features, cannot yet be determined.

Streptostele elgonensis, sp. n. (Pl. XIV. fig. 9.)

Shell small, acicular, subrimate, thin, silky, transparent, lacteous. Spire produced, sides nearly regular, apex acute. Whorls 9, slightly convex, gradually increasing, the first smooth, second extremely faintly, closely transversely striate, remainder sculptured with well-defined, rather close, regular, straight, vertical rib-striæ, fainter on the base of the last whorl; suture moderately oblique, subcrenulate, well defined. Aperture subrhomboid, peristome simple, outer lip hardly curved outward, advancing very slightly in profile and then receding a little to the base; columella straight and erect, margin moderately thickened, producing a small rimation; callus faint; dentition none.

Long. 8·6, lat. 2·1; apert., alt. 1·7, lat. 1·0; last whorl 3·0 mm.

Hab. Uganda, Mt. Elgon (*Woodhouse*).

Streptostele hasta, sp. n. (Pl. XIV. fig. 16.)

Shell of fair size, lanceolate, rimate, thin, smooth, glossy, transparent, pale olivaceous-vitreous. Spire much produced, sides straight, apex acute. Whorls 10, nearly flat, regularly

and very gradually increasing, the first 4 closely, but very faintly, microscopically punctate, remainder sculptured with close, very faint though rather broad, curved, somewhat oblique, transverse striæ; suture moderately oblique, subcrenulate, well defined. Aperture subrhombic, peristome simple, thin; outer lip but little curved, hardly arched forward and then receding gradually to the base; columella straight and erect, margin narrowly reflexed, forming a minute rima; callus and dentition none.

Long. 11·7, lat. 2·7; apert., alt. 2·2, lat. 1·2; last whorl 4·0 mm.

Hab. Kenya, Urguess (*Percival*).

The long straight-sided spire and faint, yet coarse, sculpture distinguish this species from any of its neighbours; it has flatter whorls than *S. crenulata* (Smith).

Streptostele clavulus, sp. n. (Pl. XIV. fig. 17.)

Shell of moderate size, acicular, subrimate, thin, smooth, shining, bleached in the type, but normally transparent and pale olivaceous-vitreous. Spire produced, sides almost straight, apex narrowly rounded. Whorls 9, flattened, regularly and gradually increasing, the last showing a faint trace of basal angulation, the first 2 smoothly, densely, microscopically punctate, remainder sculptured with extremely faint, regular, almost straight and vertical striæ, which, under a lens, are only apparent in the sutures on the 4th and 5th whorls, and gradually become more visible on the later ones; suture slightly oblique, crenulate, shallow. Aperture sub-piriform, rounded at base; peristome thin, simple; outer lip curved a litle outwards, receding in profile gradually to the base; columella straight, a little inclined inwards, margin very narrowly reflexed; callus and dentition none.

Long. 8·5, lat. 2·3; apert., alt. 2·0, lat. 0·8; last whorl 3 5 mm.

Hab. Kenya, Larogi Hills (*Percival*).

The type is somewhat bleached and immature, but quite distinct by reason of its flattened whorls; it differs clearly in sculpture from *S. hasta*.

Streptostele crassicrenulata, sp. n. (Pl. XIV. fig. 18.)

Shell of moderate size, acicular, subrimate, thin, smooth, shining, transparent, pale olivaceous-vitreous. Spire produced, sides very slightly convex at the 7th whorl, apex acute. Whorls 10, rather flat, very gradually increasing,

the first $2\frac{1}{4}$ practically smooth, remainder bearing extremely faint, almost flat, regular, transverse striæ, almost invisible on the smooth whorls, but strongly accentuated in the sutures, which are nearly horizontal, crenulate, and well defined. Aperture subovate; peristome simple, acute; outer lip not much curved outward, straight in profile, slightly receding to the base; columella vertical, margin slightly reflexed, forming a minute rima; callus and dentition none.

Long. 8·2, lat. 2·1; apert., alt. 1·8, lat. 0·8; last whorl 2·8 mm.

Hab. Kenya, Forests north of Mt. Kenya (*Percival*).

Compares very closely with the enlarged figure of *S. zambiensis*, Pilsbry, whose sculpture appears to be similar. The last-named, however, is $3\frac{1}{2}$ mm. longer with the same number of whorls, so is obviously an altogether larger form. The sculpture—or, rather, want thereof, except in the suture—is very remarkable, and distinguishes *S. crassicrenulata* from neighbouring species which resemble it closely in other respects.

Streptostele patruelis, sp. n. (Pl. XIV. fig. 22.)

Shell of moderate size, rimate, torpediniform, thin, smooth, dull in the type, but normally transparent and pale olivaceous. Spire produced, sides nearly parallel from the base to the 8th whorl and then gradually tapering to the acute apex. Whorls 10, rather flat, regularly and very gradually increasing, first 4 sparsely microscopically punctate, remainder sculptured with extremely faint, close, nearly straight, moderately oblique, transverse striæ, hardly visible except in the suture, which is nearly horizontal, crenulate, and shallow. Aperture subovate, peristome simple, outer lip very little curved outward, almost straight in profile, only receding very little toward the base; columella very slightly concave, margin narrowly reflexed, forming a clear rima; callus very faint; dentition none.

Long. 8·6, lat. 2·4; apert., alt. 1·7, lat. 1·1; last whorl 3·0 mm.

Hab. Kenya, Larogi Hills (*Percival*).

Clearly distinct in shape from the preceding species, which it somewhat resembles in sculpture.

Streptostele nyiroensis, sp. n. (Pl. XIV. fig. 23.)

Shell comparatively large, elongate-turriform, subrimate, thin, silky, semitransparent, pale olivaceous. Spire considerably produced, slightly bent to the right, apex acute.

Whorls 10, not very convex, very gradually increasing, the first 1½ practically smooth, next 2 showing close spiral scratches, the next bearing very faint, close, slightly curved and oblique transverse striæ, which continue, stronger and a little more distant, on the later whorls; suture moderately oblique, shallow, subcrenulate. Aperture subovate; peristome simple; outer lip only moderately curved outward, descending almost straight and vertically in profile; columella straight, erect, margin almost adnately thickened, forming a minute rima; callus and dentition none.

Long. 11·8, lat. 2·7; apert., alt. 2·5, lat. 1·7; last whorl 4·6 mm.

Hab. Kenya, Mt. Nyiro, 8300 feet (*Percival*).

A more slender form than *S. elongata* and distinct from *S. urguessensis* by the sculpture of the early whorls.

Streptostele osculum, sp. n. (Pl. XIV. fig. 24.)

Shell of moderate size, elongate, rimate, thin, rather glossy, translucent, olivaceous. Spire produced, sides convex at the 6th whorl, apex acute. Whorls 9, not very convex, first 6 regularly and gradually increasing, remainder almost equal; the first 4 faintly microscopically punctate, the 2nd, 3rd, and 4th showing decreasingly faint traces of transverse striation, especially in the suture; remainder sculptured with fine, faint, close, regular, straight, very slightly oblique, transverse striæ; suture nearly horizontal, shallow, with a subcrenulate margin. Aperture suboval; peristome simple; outer lip hardly curved outward, almost straight in profile, only receding very slightly near the base; columella straight, erect, margin narrowly reflexed, forming a small rima; callus very faint; dentition none.

Long. 9·4, lat. 2·4; apert., alt. 1·8, lat. 1·1; last whorl 3·3 mm.

Hab. Kenya, Igembi Hills (*Percival*).

This species differs from *S. urguessensis*, perhaps its nearest ally, in being a more slender form with fainter sculpture.

Streptostele ordinaria, sp. n. (Pl. XIV. fig. 25.)

Shell of fair size, lanceolate, subrimate, thin, smooth, shining, transparent, pale olivaceous. Spire much produced, sides very slightly convex at the 8th whorl, whence they are parallel to the base; apex acute. Whorls 10, moderately convex, extremely gradually increasing, first 3 faintly, somewhat sparsely microscopically punctate, remainder sculptured

with very faint, close, regular, straight, almost vertical striæ, which are strongest on the 6th and 7th whorls; suture moderately oblique, crenulate, well defined. Aperture subovate, peristome simple, outer lip curved outward, almost straight and vertical in profile; columella very slightly concave, margin thickened sufficiently to form a minute rimation; callus and dentition none.

Long. 10·7, lat. 2·6; apert., alt. 2·3, lat. 0·9; last whorl 4·0 mm.

Hab. Kenya, between the Laikipia Plateau and Eusso Nyiro (*Percival*).

Streptostele crassiplicata, sp. n. (Pl. XIV. fig. 30.)

Shell rather small, turriform, subrimate, thin, rather smooth, glossy, transparent, pale olivaceous. Spire produced, sides nearly regular, apex narrowly rounded. Whorls 8, moderately convex, slowly and regularly increasing, the first 2 practically smooth, remainder sculptured with extremely faint, close, straight, vertical striæ, best seen in and just below the suture, which is nearly horizontal, crenulate, and well defined. Aperture irregular, peristome simple, outer lip curved outwards, straight and perpendicular in profile; columella straight, erect, margin extremely narrowly reflexed, forming a minute rimation; callus and dentition none.

Long. 6·8, lat. 2·2; apert., alt. 1·7, lat. 1·0; last whorl 3·0 mm.

Hab. Kenya, Jombene Hills, 4000 ft. (*Percival*).

Streptostele columna, sp. n. (Pl. XIV. fig. 29.)

Shell of fair size, torpediniform, subrimate, bleached in the type, but normally thin, silky, nearly transparent, pale olivaceous. Spire produced, sides tapering extremely gradually from the base to the 5th whorl, and thence more rapidly to the narrowly rounded apex. Whorls 10, flattened, extremely gradually increasing, first 3 practically smooth, remainder sculptured with faint, very fine and close, straight, very slightly oblique, transverse striæ; suture oblique, simple, shallow. Aperture subovate, peristome thin, simple; outer lip moderately curved outward, almost straight in profile, receding a little to the base; columella slightly concave, margin narrowly reflexed, forming a minute rima; callus well marked; dentition none.

Long. 10·8, lat. 2·5; apert., alt. 2·0, lat. 1·2; last whorl 3·8 mm.

Hab. Kenya, Rumruti, Laikipia Plateau, 6000 ft. (*Kemp*).

Rather widely diffused in the Laikipia District, and showing considerable variation between extremes of form, the fine, close sculpture, however, remaining unchanged.

Subgenus Raffraya, Bourguignat.

Streptostele (*Raffraya*) *clara*, sp. n. (Pl. XIV. fig. 6.)

Shell small, elongate, imperforate, thin, smooth, glossy, transparent, lacteous-vitreous. Spire produced, sides regular, apex bluntly rounded. Whorls 7, rather flat, gradually and regularly increasing, the first 2 smooth, remainder sculptured with close, regular, nearly straight, vertical striæ, very faint on the 3rd and 4th and only a little stronger on the later whorls, but strongest just below the suture, which is crenulate, margined below, and rather shallow. Aperture shortly ovate, very broadly rounded at base; peristome white and shining, thickened, but scarcely reflexed: outer lip well curved outward, hardly advancing in profile, but receding sharply to the base for a little more than half its length; columella concave, of the same thickness as the rest of the peristome; callus clear, but not thick; dentition none.

Long. 5·7, lat. 1·7; apert., alt. 1·4, lat. 0·8; last whorl 2·6 mm.

Hab. Cameroun, Bitze (*Bates*).

Streptostele (*Raffraya*) *currata*, sp. n.
(Pl. XIV. fig. 5.)

Shell small, elongate, rimate, thin, silky, nearly transparent, lacteous. Spire produced, slightly convex on the left and concave on the right side; apex bluntly rounded. Whorls 7, flattish, slightly gradate, regularly and very gradually increasing, the first 2 smooth, remainder sculptured with strong, close, regular, nearly straight, vertical costæ, which become obsolete on the paries; suture hardly crenulate, impressed. Aperture quadrate-ovate, broadly rounded at base; peristome white, shining, minutely reflexed; outer lip slightly sinuous, curved outwards and backwards, in profile, to the base; columella straight, short, slightly inclined inwards, margin broadly triangularly reflexed over the rima; callus almost imperceptible; dentition, a most minute tubercle in the angle of the paries and outer lip.

Long. 6·0, lat. 1·9 ; apert., alt. 1·6, lat. 0·8 ; last whorl 2·7 mm.

Hab. Uganda, Mt. Elgon (*Woodhouse*).

Streptostele (*Raffraya*) *auriformis*, sp. n.
(Pl. XIV. fig. 7.)

Shell very small, shortly acicular, rimate, rather thin, smooth, translucent, milky-olivaceous. Spire produced, sides nearly parallel from base to 5th whorl, and then tapering slightly more rapidly to the narrowly rounded apex. Whorls 7, convex, gradually increasing, the first 3 practically smooth, remainder sculptured with very faint, close, straight, vertical striæ ; suture subcrenulate, well defined. Aperture quadrate, broadly rounded at base ; peristome white, shining, thickened and extremely narrowly reflexed ; outer lip moderately outcurved, slightly sinuous at the angle at which, after advancing very gradually a short distance in profile, it recedes rather rapidly to the base; columella slightly oblique, with a vertical groove towards its upper extremity, margin narrowly reflexed, almost concealing the small rima ; there is a slight tendency towards a callus, but no dentition.

Long. 4·7, lat. 1·6 ; apert., alt. 1·2, lat. 0·6; last whorl 2·2 mm.

Hab. Kenya, Rumruti, Laikipia Plateau, 7000 ft. (*Kemp*).

Streptostele (*Raffraya*) *cylindrica*, sp. n.
(Pl. XIV. fig. 41.)

Shell very small, acicular, rimate, thin, smooth, shining, transparent, very pale olivaceous-vitreous. Spire produced, sides slightly convex at the 4th whorl, apex rounded. Whorls 6½, almost flat, very gradually increasing, the first 2 smooth, remainder, under a strong lens, practically so, the sculpture only being noticeable in the impressed, strongly crenulate suture. Aperture piriform, peristome white, shining, a little thickened and minutely reflexed ; outer lip hardly curved outward, angulate very slightly forward and then receding more rapidly to the base ; columella rather concave, margin narrowly reflexed over the rima ; callus and dentition none.

Long. 4·1, lat. 1·3 ; apert., alt. 1·1, lat. 0·7 ; last whorl 1·7 mm.

Hab. Uganda, Mt. Elgon (*Woodhouse*).

Chiefly distinguishable from other known species by its smooth whorls with crenulate suture.

Streptostele (*Raffraya*) *constricta*, sp. n.
(Pl. XIV. fig. 40.)

Shell very small, subaciculate, rimate, thin, somewhat silky, transparent, pale olivaceous. Spire produced, sides slightly convex at the 4th whorl, apex rounded. Whorls $6\frac{1}{2}$, rather flat, gradually, rather irregularly increasing, the first $1\frac{1}{2}$ smooth, remainder sculptured with faint, nearly straight, vertical rib-striæ, which are most visible in the impressed, crenulate suture. Aperture subpiriform, broadly rounded at base; peristome white, shining, thickened, and very narrowly reflexed; outer lip a little curved outward, very slightly angulate forward and then receding slightly further to the base; columella concave, margin triangularly thickened and expanded, forming a well-marked rima; callus pronounced; dentition none.

Long. 4·1, lat. 1·2; apert., alt. 1·1, lat. 0·75; last whorl 1·8 mm.

Hab. Kenya, Kekumega (*Percival*).

Very similar to *S. cylindrica*, but with considerably stronger sculpture.

Streptostele (*Raffraya*) *unidentata*, sp. n.
(Pl. XIV. fig. 42.)

Shell extremely small, rather elongate, subrimate, rather thin, silky, semitransparent, pale olivaceous. Spire produced, sides almost parallel, apex narrowly rounded. Whorls 6, rather convex, hardly increasing after the first; the first $2\frac{1}{2}$ smooth, remainder sculptured with comparatively strong, regular, straight, vertical striæ; suture simple, rather impressed. Aperture piriform; peristome white, shining, thickened, minutely reflexed; outer lip hardly curved outward, very slightly angulate forward and then receding a little less slightly to the base; columella erect, thickened, margin narrowly reflexed, forming a minute rima; callus none; dentition consisting of a small sharp denticle, which is not clearly brought out in the figure, near the middle of the paries and an inward swelling, almost amounting to a tubercle, at the angulation of the outer lip.

Long. 2·8, lat. 0·9; apert., alt. 0·5, lat. 0·3; last whorl 1·2 mm.

Hab. N. Rhodesia, north bank of R. Zambesi, Victoria Falls (*Soper*).

A wonderful little species, remarkable alike for its minute size and well-marked dentition.

Streptostele (*Raffraya*) *taylori* (Gibbons).
(Pl. XIV. fig. 26.)

As this little-known species has never been satisfactorily illustrated, I publish a figure of the type, which is in the British Museum. The dentition consists of a blunt, sinuous, parietal plait hardly visible in the figure, developing into a sharp point a little within the aperture, and a marked protuberance on the incurvation of the outer lip; the shell is 4·8 mm. long.

Subgenus Graptostele, Pilsbry, 1919.

Minute shells with faint microscopic spiral sculpture.

Streptostele (*Graptostele*) *candelula*, sp. n.
(Pl. XIV. fig. 20.)

Shell very small, shortly acicular, imperforate, thin, smooth, glossy, nearly transparent, lacteous. Spire produced, sides tapering extremely gradually, apex broadly rounded. Whorls 7, nearly flat, 2nd and 3rd about equal, remainder very slowly increasing; all are sparsely, faintly, microscopically punctate, practically devoid of transverse sculpture with the exception of an occasional nearly straight and vertical growth-line, and showing traces throughout, under the microscope, of extremely faint, close, flat, spiral striation of somewhat irregular prominence; suture simple, shallow, narrowly margined below. Aperture squarely piriform, broadened and rather flattened at the base; peristome simple but by no means thin; outer lip receding infinitesimally just below the suture and then advancing slightly before receding markedly to the base; columella slightly concave, margin adnately thickened, callus and dentition none.

Long. 4·1, lat. 1·2; last whorl 1·9 mm.

Hab. Camerun, Bitze (*Bates*).

The type appears to be mature and, from its faint spiral sculpture, to belong to Pilsbry's subgenus *Graptostele*. It is easily distinguishable from the young of *Raffraya clara* through lacking any of the transverse striation, which shows clearly just below the suture in that species.

Streptostele (*Graptostele*) *iota*, sp. n. (Pl. XIV. fig. 19.)

Shell very small, shortly acicular, subrimate, thin, smooth, shining, nearly transparent, lacteous. Spire produced, sides

straight, tapering very gradually to the rounded apex. Whorls 7, not very convex, regularly and slowly increasing, practically smooth except for a few vertical growth-lines and several extremely faint, close, rather irregular, incised spiral striæ, which are almost invisible on the type, but are just noticeable under a microscope on all the whorls of a less mature shell; suture simple, a little impressed. Aperture subovate; peristome thin, simple; columella erect, slightly thickened upwards, margin most narrowly reflexed at the base, forming a minute rimation; callus pronounced; dentition none.

Long. 4·3, lat. 1·3; last whorl 1·8 mm.

Hab. Kenya, Mt. Kenya, 7000–9000 ft. (*Kemp*); between the Igembi Hills and Nyeri (*Percival*).

Streptostele (*Graptostele*) *joli*, sp. n.

Differs from the foregoing mainly in having more convex whorls and deeper suture; the incised spiral sculpture also is closer and stronger after the 2nd whorl and the last 2 whorls show a little faint, close, vertical striation. The shell contains 7 whorls and measures:—long. 4·6, lat. 1·5; last whorl 1·9 mm.

Hab. Kenya, Rumruti (*Kemp*).

Genus Varicostele, Pilsbry, 1919.

Comparatively large, nearly smooth shells, differing from *Streptostele*, s. s., in the peristome remaining simple and acute at all stages of growth, without thickening, reflexion, or expansion.

I agree with Pilsbry that *Subulina roccatii*, Pollonera, belongs to this genus.

Varicostele rutshuruensis, Pilsbry, 1919.

I attribute to this species a shell collected by Kemp on the shore of L. Mutanda, in the extreme south-west corner of Uganda, less than 20 miles from Rutshuru. It agrees well with the description of *rutshuruensis* and is commensurate with the second example whose measurements are given by Pilsbry; its apex, however, is noticeably broader in proportion than that of Pilsbry's enlarged figure, though I cannot say whether this is due to slight inaccuracy in drawing or to individual variation in the shell.

Varicostele lessensis, Pilsbry, 1919.

Here, again, shells collected in Uganda by Kemp at Kigezi and by Dummer at Abiri appear inseparable from another

of Pilsbry's species, although the localities are somewhat distant from that in which *lessensis* was found and from each other. They agree so closely in sculpture and dimensions with Pilsbry's description of *lessensis* that they can hardly be varietally distinct, but their spire has a more graceful appearance than in his enlarged figure, agreeing better in this respect with his fig. 15, *V. subvaricosa*, Mts, than with *lessensis*. The columella is adnately thickened, so that in most cases any rimation is completely obscured; in the shells from Abiri close microscopic spiral sculpture is plainly visible in patches on most of the whorls and more faintly on the base, but this feature is probably due to their fresh condition rather than to specific distinction.

Varicostele curvicolumella, sp. n. (Pl. XIV. fig. 31.)

Shell of moderate size, elongate-turriform, imperforate, thin, silky, transparent, pale olivaceous. Spire produced, sides regular, apex rounded. Whorls 7, convex, gradually increasing, the first 2 microscopically punctate, remainder sculptured with close, faint, regular, almost straight, scarcely oblique striæ; suture simple, nearly horizontal, well defined. Aperture shortish ovate, peristome simple, outer lip rather curved outwards, gradually receding in profile to the base; columella inclined inwards from the base, very slightly thickened as it ascends; callus hardly noticeable; dentition none.

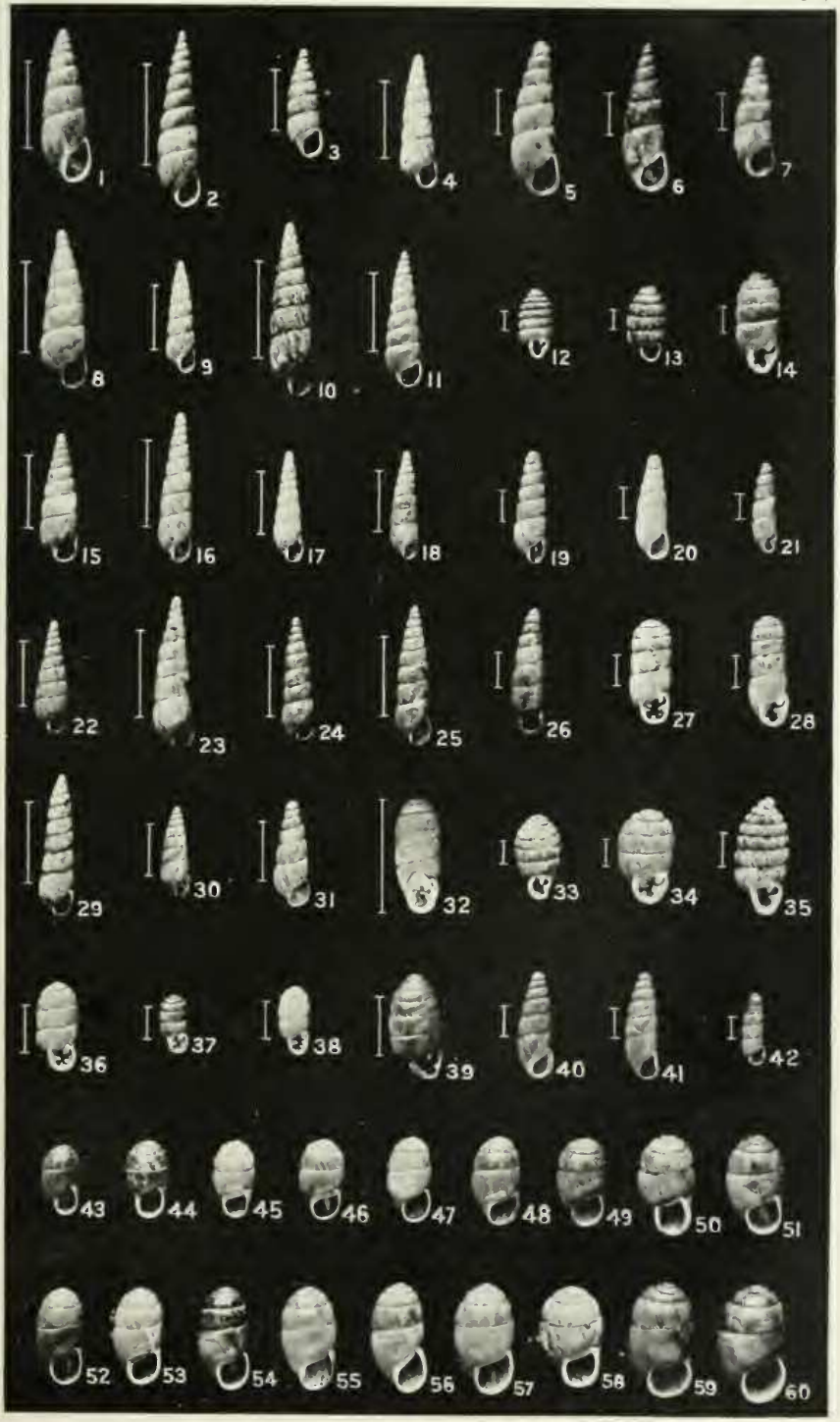
Long. 7·9, lat. 2·7; apert., alt. 2·2, lat. 1·3; last whorl 3·8 mm.

Hab. Uganda, Jinja (*Kemp*).

Differs from both the foregoing species in sculpture, the striæ being fainter and wider apart, and in having shorter, more convex, whorls.

EXPLANATION OF PLATE XIV.

Fig. 1. *Streptostele signata*, Connolly.
Fig. 2. —— *urguessensis*, Connolly.
Fig. 3. —— *falloni*, Connolly.
Fig. 4. —— *kenyana*, Connolly.
Fig. 5. *Raffraya curvata*, Connolly.
Fig. 6. —— *clara*, Connolly.
Fig. 7. —— *auriformis*, Connolly.
Fig. 8. *Streptostele oribates*, Connolly.
Fig. 9. —— *elgonensis*, Connolly.
Fig. 10. —— *elongata*, Connolly.
Fig. 11. —— *validior*, Connolly.
Fig. 12. *Gulella filix*, Connolly.
Fig. 13. *Plychotrema cedrorum*, Connolly.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